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92014

Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Level 1 Materials and Processing Technology 2024

92014 Demonstrate understanding of sustainable practices in the development of a Materials and Processing Technology design

Credits: Four

ASSESSMENT TASK

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of sustainable practices in the development of a Materials and Processing Technology design.	Examine sustainable practices in the development of a Materials and Processing Technology design.	Evaluate sustainable practices in the development of a Materials and Processing Technology design.

Refer to this document to respond to the task for Materials and Processing Technology 92014.

Check that this document includes page 2.

Do not use chatbots, generative AI, or other tools that can automatically generate content.

DO NOT TAKE THESE ASSESSMENT MATERIALS OUT OF THE ASSESSMENT ROOM.

Excellence TOTAL 08

ASSESSMENT TASK

Insert an image of your brief with specifications – *NOTE: this is provided for marker context only*

The end user is myself, the purpose of my outcome is intended to be a set of pjs suitable for the summer. I designed the pants of my design to be midrise, full length, and flowy. The pants use organic elastic for functionality and a drawcord for physical attributes, the pants also have 4 pockets - 2 inseam, 2 back patch pockets. The shirt is more fitted to the body as well as being cropped. The shirt uses corozo nut buttons and has a breast patch pocket. The shirt also has a collar. I considered Kaitiakitanga when choosing how to make my garment in the most sustainable way. I considered Kaitiakitanga through my research process. I did this in my selection of materials by selecting organic natural materials sourced ethically and can be disposed of in an eco friendly manner, eg: composting. Hemp fabric was the most sustainable fabric for me because it was easy to dispose of as well as easy and sustainable to grow. I also researched and selected other sustainable materials my garment would need such as buttons, elastic, and dyes . Kaitiakitanga is shown in this because it respects the environment in how the fabric and other components are made but are also ethically sourced helping the people who make them. In my research about the economic use of materials I decided ways in which I can use my material the most sustainably with the least waste. To reduce waste I plan to use a zero waste pattern as well as a lay plan. I'm also using my materials economically by creating a durable well made garment that won't need to be replaced for a while. The final piece of research I conducted to find the most respectful and sustainable way to create my garment was waste disposal. By researching appropriate methods for my fabric to be disposed of I could ensure my garment had ways to be reused or composted. This relates to Kaitiakitanga because unlike synthetic materials, organic materials break down giving back to the earth rather than taking from it. Fabric waste makes up a large portion of the world's total waste. By researching waste disposal I ensure my garment won't end up in that percentage. I used stakeholder feedback to refine my designs such as considering my expert and secondary stakeholder when deciding what combination of shirt and pants from my initial drawings as well as making me consider other functional and physical attributes i could add such as a drawstring and a pocket. My expert and secondary stakeholders both asked me to consider using a zero waste pattern and lay out a plan to optimise my sustainable practice in my design by minimising waste. My stakeholder feedback helped make decisions throughout my design and research process by providing feedback related to doing more research on disposal options and how they can be done in NZ, as well as doing my research on notions to find the most sustainable options for other materials.

Specifications

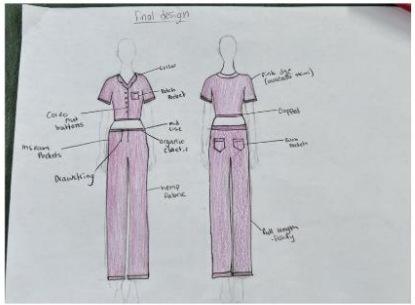
- Set of summer pajamas.
- Cozy and flowy
- Suitable for warmer weather low impact on the environment.
- Flowy, breathable and soft to the skin
- Soft colour palette.
- The intended environment of these pajamas is summertime

ASSESSMENT TASK

a. Provide an image or images of your design and briefly describe its specifications, including physical and functional attributes, the person / whānau / community your design is for, and your product's intended environment.

For this standard I designed a set of pajamas for myself made up of organic hemp fabric. The pajamas are intended for the summer time because hemp fabric is relatively lightweight and the blouse is cropped, however the pajamas would still be used during the winter due to the fabrics thermal dynamic nature, this means it keeps you cool when it's hot but warm when its cold. The pajamas have many physical and functional attributes the full list is in the attached image. My pajama's use Corozo nut buttons and organic elastic to fully align my design with the concept of kaitiakitanga. Overall my pajamas have 5 pockets 1 breast pocket, 2 inseam pockets, and 2 patch pockets.

Final Concept Ideas



Physical and Functional attributes

1. Inseam pockets x2
2. Patch pockets x3
3. Organic elastic
4. Drawstring (fabric)
5. Corozo nut buttons x5
6. Full length pants
7. Mid rise pants
8. Cropped top
9. Hemp fabric
10. Pink dye (avocado skins)

ASSESSMENT TASK

b. How did you apply sustainable practices during the development of your design?

Consider ***one or more*** of the following:

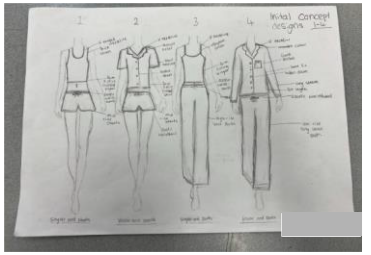
- The impact of your product on the environment (positive or negative).
- How your research into sustainable practices informed the development of your design.
- The reason for your choice of materials or resources, including possible alternatives.
- The disposal or reuse of waste materials or resources.
- The economical use of materials or resources (including choice of tools, equipment, or techniques).
- Other aspects of kaitiakitanga related to environmental responsibilities.

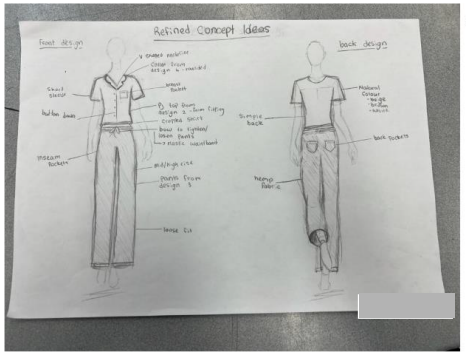
I chose hemp fabric because of my research into its fabric life cycle. To begin with hemp fabric is a high yield croup and takes less space to produce a high quantity of fabric compared to other organic fabrics. It is more expensive to grow than other fabrics I considered such as cotton but it uses a lot less water, for 1kg of hemp fabric you would would need 2300L of water compared to cotton which is 10000L for 1kg. Hemp fabric also absorbs carbon dioxide as it grows and at the end of its life cycle is 100% biodegradable and in the correct environment can decompose in 2 weeks which is a lot faster than other fibers I considered such as wool or bamboo which both take 1-5 years. I also continued my research into other notions of design such as buttons, elastic, thread, dye. From my research I decided to incorporate corozo nut buttons these buttons are 100% biodegradable and will go back to the earth with the rest of the garment when it has reached the end of its life, I am also choosing to use organic elastic for the same reason, for my drawstring however I have chosen to use scrap fabric and attach it to the elastic to continue to consider kaitiakitanga and think about my economic use of materials. Threads can often be made of petroleum and not decompose with organic materials so it was important for me to consider an organic alternative such as EcoRegan thread which is comprised of 100% lyocell and like the rest of my components in 100% biodegradable. For dye I have conducted research in using vegetables, for my specific design I have chosen to use avocado seeds to create a light pink fabric. I furthered my research to consider the end of my garment just because all of the components of my design are biodegradable doesn't mean that is the only option. An alternative option is recycling I researched two main options mechanical recycling and blending. Mechanical recycling breaks down the fabric into its fibers and turns it into something new continuing the life cycle of the garment. Blending is a technique where the hemp fabric can be incorporated into a mix of other organic fibers keeping its compostability but extending its life and versitly. The benefits of recycling is waste reduction currently textile waste makes up 7% of the worlds waste and reducing that by recycling will be endlessly beneficial, and relevant to the concept of kaitiakitanga

ASSESSMENT TASK

C. Using text and images, give a visual representation of the development of your design, showing where in the design process you used sustainable practices.

In my initial design I had not considered alternative options for my components such as buttons, thread, elastic, dye throughout my design notions you can see the additions of this. My design initially started with 4 concept ideas of a mixture of pants, shorts, blouses, and singlets ultimately in my refined concept I used a blouse and pants, I used kaikitnaga in the development of my design by considering how I will use my materials the most economically, I am doing this by using a zero waste pattern, a lay plan, and using any extra scraps in the design as elements like drawstrings. Another way my development of design incorporated sustainability practices is by creating a high quality design This links to kaikitanga because instead of buying or creating lots and lots of low quality garments creating more waste by creating one high quality garment I ensure I am being the most sustainable. And that the garment will be loved and used often.

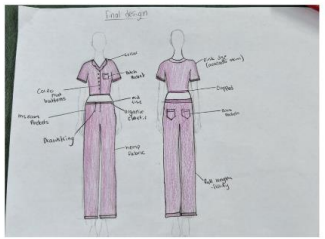




Physical and functional attributes

V shaped neckline
Collare from design 4
Breast pocket
Pj top from design two
Top is form fitting and cropped
Bow to tighten pants
Mid rise
Elastic waistband
Pants from design 3
Loose fitted pants
Inseam pockets x2
Button down
Short sleeve
Neutral colour
Back pockets (pacth)
Hemp fabric
Simple back design

Final Concept Ideas



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ASSESSMENT TASK

(d) During the development of your design, you will have consulted with two or more different stakeholders about relevant sustainable practices.

(i) Who were the different stakeholders you talked to about relevant sustainable practices?
I talked to three stakeholders throughout the development of my design. The first stakeholder was the end user which was myself, I also used a secondary stakeholder who was a fellow classmate, and finally I used an expert stakeholder to guide and contribute to my design process.

(ii) What did the stakeholders discuss with you in relation to sustainable practices?
My expert stakeholder gave me feedback in the initial stages of my research to direct my research towards extra components that I would need and how to incorporate them in the most sustainable way this included my thread, elastic, and buttons. My secondary stakeholder gave me advice to look further into waste disposal options and why it is important to dispose of garments in a sustainable way. This extra waste disposal research gave me idea of all the options such as mechanical recycling, blending, and composting. As an end user I focused my feedback to create a garment I would love this directed my feedback to sustainable use of dyes to create a colour I would love.

(iii) How did you use that information to develop your design?

From the advice regarding the physical attributes of my design (eg: Buttons, elastic, thread, dye) helped me develop my design by focusing my concepts to fully incorporate kaitiakitanga and think about organic alternatives to plastic in textiles, it also made me think on how to elevate my design using organic dyes and such. Furthering my research into waste disposal methods gave me a better understanding of the final stages of my garment once it had become to worn down, it showed me different ways its life can be continued with contributing to the growing fabric waste.

Excellence

Subject: Materials and Processing Technology

Standard: 92014

Total score: 08

Grade score	Marker commentary
E8	The intended end user has been identified and explained. The specifications have been clearly identified. The candidate has provided more than sufficient evidence to meet EN2 requirements. The discussion of kaitiakitanga included detailed research into organic alternatives and the use of compostable textiles, threads, and buttons (disposal of waste). Material choices have been evaluated, explaining their choice. Refinement of sustainable practices has been highlighted by use of a zero-waste pattern. Improvements to the design have been explained in detail based on stakeholder feedback.